

PROCEEDINGS OF THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

SERIES C. JOURNAL OF MEETINGS

VOLUME 21.

No. 7, 1956

ORDINARY MEETING

WEDNESDAY, 7th NOVEMBER, at 5.30 p.m.

AGENDA

1. Confirmation of the Proceedings of the Ordinary Meeting held on 3rd October, 1956.
2. Recommendations of candidates for Fellowship. First reading.
3. Recommendations of candidates for Fellowship. Second reading.
4. Announcement of election of new Fellows.
5. Additions to the Library [see p. 35].
6. Admission of Fellows.
7. Exhibits.

As the December meeting will be devoted to exhibits and brief communications, Fellows are requested to reserve any exhibits that are not urgent until that meeting (5th December).

8. Communications.

Mr. Dennis Leston.

Shieldbug systematics : a study in phylogenetic methods.

[ABSTRACT.]

A comparative study has been undertaken of the usual structures (wing venation, male and female genitalia, etc.) used by systematists and some (gastric caecae, spermathecae, etc.) not normally used : function and basic morphology have been kept in mind throughout. Parallel studies have been made of other biological features, including egg structure, some aspects of behaviour and physiology (sound production, maternal solicitude, symbiont transmission) and

cytology. Chromosome numbers show two types of variation; a phyletic change from $2n = 12$ to $2n = 14$, and a wide range of interspecific variation wherein deviation from family type number is significantly associated with a temperate climate. Two interesting zoogeographical problems are met: Meci-diinae has one exclusively Australasian tribe and the other found in all the deserts of the world except in Australia; Acanthosomidae has an ancient circumaustral range and a modern burst of speciation centred on eastern Asia.

Evolution has been by diversification and by splitting. The highest family of Pentatomoids is Pentatomidae, owing its success to an elaborate egg permitting oviposition in a wide humidity range, to an evolved method of sound production and a more efficient wing. The most generalised Pentatomoids are the gigantic Tessaratomidae, which exhibit no tendency to loss of spiracle function.

TEA will be served in the Library before the meeting.

NOTICES.

Provision of refreshments after Ordinary Meetings.

The Council of the Society has decided that coffee and biscuits shall be provided in the Society's rooms following Ordinary Meetings. A charge of one shilling per person will be made. Visitors will be welcomed, provided they are introduced and paid for by Fellows.

The serving of refreshments will cease and the house will be closed not later than 60 minutes after the end of the meeting. It will not be possible to keep the Library open during this time and it will therefore continue to be closed at the end of the meeting.

As the number it will be necessary to cater for must be known in advance, Fellows are asked to give prior notice of their intention to stay by signing their names on a list, which will be placed beside the Attendance Book, before 5.30 p.m.

Forthcoming Ordinary Meetings.

Preliminary notice is given below of the principal papers to be read at the next two Ordinary Meetings:

5th December.

Exhibits and brief communications.—As in previous years, this meeting will be devoted to small exhibits of special interest requiring only short explanations.

16th January, 1957.

Dr. C. A. Clarke and Dr. P. M. Sheppard.—The genetics of some mimetic forms of *Papilio dardanus* and *Papilio glaucus*.

PROCEEDINGS OF THE ORDINARY MEETING HELD ON 3RD OCTOBER, 1956.

Dr. W. J. HALL, C.M.G., M.C., President, in the Chair.

Present, 86 Fellows and 11 Visitors.

The minutes of the Ordinary Meeting held on 4th July were confirmed and signed by the President.

The names of the following candidates for election were read for the first time : Mr. Ram Autar Agarwal, B.Sc. ; Mr. Augustine Amechi ; Mr. Sidney Charles Scarsdale Brown, L.D.S. ; Mr. Amar Nath Chatteraj ; Mr. Michael Wilson Fox ; Mr. Charles Cyril Roy Goodwin ; Mr. Joseph Harold Johnson ; Miss Anne Dorothy Loubser ; Miss Olive McCartney ; Mr. Amyan Macfadyen, M.A. ; Mr. John Russell Metcalfe ; Mr. James Muspratt ; Mr. Takehiko Nakane ; Mr. James Frederick Newman ; Mr. Abdus Sattar ; Dr. David Gordon Shappirio ; Mr. Prem Dulare Srivastava ; Mr. Tirūvarur Subrahmaniyaiyer Sundaram ; Dr. Joseph Julius Szent-Ivány, Ph.D. ; and Mr. Christopher Wilkinson.

For the second time (taken as read) : Mr. Awad Ahdin Ali ; Mrs. Ivy Doreen Classey ; Mr. Gavin John Hitchings ; Mr. Taro Iwase ; Dr. K. N. Katiyar, M.Sc. ; Miss Mary K. Kraft, B.Sc. ; Mr. Charles William Lamb ; Mr. Edward Alexander Mackay ; Mr. George Millar ; Dr. Edwin Richard Nye ; Mr. Michael James Parr ; Mr. B. Sripathi Rao, M.A. ; Mr. M. I. Thomas ; Mr. Jeremy David Weller ; Mr. John Kenneth Williams.

The Secretary read the names of the following newly elected Fellows of the Society : Mr. Peter Frederick Beales, 38, Broadmead, Bellingham, London, S.E.6 ; Mr. Cunteepuram Krishnamoorthy, B.Sc., Assistant Entomologist, Rice Stem Borer Scheme, I.C.A.R., Bapatla, India ; Dr. Basil Joseph MacNulty, B.Sc., Ph.D., T.T.E., Port Harcourt, Nigeria ; Dr. S. V. Pingale, B.Sc., Ph.D., Central Food Technological Research Institute, Mysore, India ; Mr. V. Ramakrishna, Malaria Control Pilot Project, Birnin Kebbi, via Kano and Sokoto, Northern Nigeria ; Mr. R. C. Satija, M.Sc., Zoology Department, King's College, Newcastle-upon-Tyne, 1 ; and Mr. Jack Zinn, M.Sc., 2A, Santa Barbara, St. John's Road, Sea Point, Capetown, South Africa.

Thanks were voted to donors of gifts to the Library since the last meeting.

Mr. W. J. Knight signed the Obligation Book and was admitted a Fellow of the Society.

The following papers, accepted for publication in the *Transactions*, were read in title :

"Observations on the migration of insects in the Pyrenees in the autumn of 1953." By C. B. Williams, I. F. B. Common, R. A. French, Vera Muspratt and M. C. Williams.

"A taxonomic account of the last instar larvae of some British Tipulinae (Diptera : Tipulidae)." By J. R. Chiswell.

Mr. W. Victor Harris exhibited egg pods of the Australian termite *Mastotermes darwiniensis* Froggart. All other termites lay their eggs singly, but *M. darwiniensis* produces them in regular masses of from twelve to twenty, as described by G. F. Hill.

Dr. P. T. Haskell gave a paper on courtship and mating behaviour in certain grasshoppers, an abstract of which appeared on page 26.

The discussion which followed was opened by **Dr. C. B. Williams** who said he remembered photographing in East Africa a female *Schistocerca* in the act of laying eggs with a male sitting on its back. **Dr. Haskell** said this had never been observed in the species he had studied.

Professor Richards having enquired if these grasshoppers laid eggs if they had not copulated, **Dr. Haskell** replied that, while they did do so, the rate of egg-laying was much slower; he could not say if the eggs hatched.

Dr. C. G. Butler asked if any information was available as to the chemical nature of the so-called glassy part of the spermatophore. **Dr. Haskell** replied that this had not been studied in detail. The glassy tube which was left in the receptaculum seminis of the female always disappeared within ninety minutes of copulation and it was possible that the breakdown products of this tube were responsible for the inhibition of response in females which followed copulation.

Dr. N. Waloff said that she believed the eggs were in the female oviduct as much as twenty-four hours before oviposition and this might also be associated with the inhibition mechanism.

Mrs. Richards having enquired whether the unresponsive state of females in mixed cages meant that copulation only occurred once, **Dr. Haskell** replied that grasshoppers were rarely found in the field *in copula*, copulation only occurring once, after which egg-laying continued throughout the remainder of life. This behaviour was no doubt defensive, the insects being very vulnerable during copulation.

Dr. Haskell assured **Dr. Southwood** that the fact that two or more males were stridulating together did not render them unconscious of the approach of responsive females.

Mr. W. B. Broughton complimented **Dr. Haskell** on his investigations and particularly on having obtained such a high percentage of response from females. He observed, in continuation of the point raised by **Dr. Southwood**, that it was rather unusual for males close together to sing the "normal" song at all—they changed automatically to the rivalry song. **Dr. Haskell** agreed that this was almost certainly the case—his own observation was based only on experience with caged grasshoppers; the female would not respond if the males were singing their rivalry song.

Mr. W. H. Potts made an enquiry regarding the reappearance of response in the female in the absence of the male song and asked the advantage of a second copulation when it occurred. **Dr. Haskell** replied that his work was done on the four species referred to in the abstract of his paper, at Silwood Park, where conditions were somewhat artificial, as the insect population occurred in fairly well marked "colonies". If the female wandered beyond the limits of the colony and could not hear the male song, it regained this response and if it heard the male song in a new colony, it would be attracted into that colony. No doubt this was all part of a mechanism for keeping the insects together, which was in accordance with the broad ecological concept that it was better for these insects to remain in communities.

Mrs. Richards said that in the Desert Locust only one copulation was necessary for fertilisation of all the eggs, but the rate of oviposition was increased by repeated copulation. **Dr. Haskell** agreed that this might be the case in grasshoppers.

Dr. Haskell continued, in reply to further enquiries, that there was abundant evidence that the song of grasshoppers was innate and no learning was involved—but males reared in solitude stridulated less frequently and their first attempts at stridulation had a noticeably slower rhythm than that of gregarious males.

E. B. BRITTON, *Honorary Secretary.*

The next meeting will be held on 5th December, at 5.30 p.m.

ADDITIONS TO THE LIBRARY.

Presented.

- British Museum (Natural History). *Ruwenzori Expedition 1934-35. Vol. 1, no. 7 Tipulidae*, by C. P. Alexander. 8vo. London, 1956. [The Trustees of the British Museum.]
- McKenzie, H. L. *The armored scale insects of California*. 4to. Berkeley and Los Angeles (University of California Press), 1956. [Bulletin of the California Insect Survey No. 5.] [The Publishers.]
- Paulian, R. *Atlas des larves d'insectes de France*. 8vo. Paris, 1956. [Nouvel Atlas d'Entomologie. No. 10.] [Editions N. Boubée & Cie.]
- Peairs, L. M., and Davidson, R. H. *Insect pests of farm, garden and orchard*. 5th ed. 8vo. New York (John Wiley & Sons), London (Chapman & Hall), 1956. [The Publishers.]
- Ross, H. H. *Evolution and classification of the Mountain Caddisflies*. 4to. Urbana (University of Illinois Press), 1956. [The Publishers.]
- [Telenga, N. A. *Hymenoptera*. Tom. 5, no. 4. *Braconidae. subfam. Microgasterinae and Agathinae*.] 8vo. Moscow and Leningrad, 1955. Fauna of U.S.S.R. (N.S.) 61. [Academy of Sciences of U.S.S.R. By exchange.]
- Tuxen, S. L., editor. *Taxonomist's glossary of genitalia in insects*. 8vo. Copenhagen (E. Munksgaard), 1956. [The Publishers.]

Purchased.

- Crotch, W. J. B. A Silkmoth rearer's handbook. *Amat. Ent.* 12 : 165 pp. 1956.
- Engel, E., editor. *Mitteleuropäische Insekten. Vorwort*. 8vo. Hamburg. 1956.
- Stichel, W. *Illustrierte Bestimmungstabellen der Wanzen. II Europa*. Hft. 12 and 13. 8vo. Berlin-Hermsdorf. 1956.

In addition, separates have been presented by East Malling Research Station ; Mr. P. R. Parameswaran Pillai ; University of California Press ; United States Department of Agriculture ; Dr. J. L. Cloudsley-Thompson ; Hope Department of Entomology ; Dr. E. C. Zimmerman ; Department of Entomology, Rothamsted Experimental Station ; Mr. S. A. Manning ; Dr. P. S. Corbet ; Mr. V. Venkat Rao ; Professor J. Lane ; West African Cacao Research Institute, Tafo ; Mr. G. O. Stride ; Dr. J. D. Carthy ; Mr. J. D. Bradley and Mr. E. L. Martin ; Mr. S. R. Bowden ; Mr. M. Niblett ; Mr. A. E. Gardner ; Department of Zoology, University of New England and Mr. P. Cachan.

NOTICES

In addition to the *Transactions and Proceedings* (Series A, B, and C), the following publications are available on application at the Society's rooms:—

THE GENERIC NAMES OF BRITISH INSECTS, WITH CHECK LISTS OF THE SPECIES, prepared by the Committee on Generic Nomenclature of the Royal Entomological Society of London with the assistance of the Department of Entomology of the British Museum (Natural History):—

Part 1. Recommendations relating to the publication of the Committee's Reports							Price	6d.
2.	Rhopalocera	..	..	..	..	..	..	3s. 6d.
3.	Odonata	..	..	..	..	..	..	3s. 6d.
4.	Neuroptera	..	..	..	..	..	..	3s. 6d.
5.	Hymenoptera Aculeata	..	..	..	..	..	..	15s. 0d.
6.	Coleoptera Carabidae	..	..	..	..	..	..	10s. 0d.
7.	Coleoptera Hydradephaga	..	..	..	..	..	..	5s. 0d.
8.	Hemiptera Heteroptera	..	..	..	..	..	..	39s. 0d.
9.	Coleoptera Staphylinidae	..	..	..	..	..	..	40s. 0d.

HANDBOOKS FOR THE IDENTIFICATION OF BRITISH INSECTS.

The Society has undertaken the issue of a series of publications intended to provide illustrated Keys to the whole of the British Insect Fauna so far as this is possible.

It is proposed to cover this field in a series of ten volumes, arranged as follows:—

- | | |
|---|---------------------------|
| I. Part 1. General Introduction. | Part 9. Ephemeroptera. |
| 2. Thysanura. | 10. Odonata. |
| 3. Protura. | 11. Thysanoptera. |
| 4. Collembola. | 12. Neuroptera. |
| 5. Dermaptera and Orthoptera. | 13. Mecoptera. |
| 6. Plecoptera. | 14. Trichoptera. |
| 7. Psocoptera. | 15. Strepsiptera. |
| 8. Anoplura. | 16. Siphonaptera. |
| II. Hemiptera. | III. Lepidoptera. |
| IV. and V. Coleoptera. | |
| VI. Hymenoptera: Symphyta and Aculeata. | |
| VII. Hymenoptera: Ichneumonidae. | |
| VIII. Hymenoptera: Cynipoidea, Chalcidoidea and Serphoidea. | |
| IX. Diptera: Nematocera and Brachycera. | X. Diptera: Cyclorrhapha. |

The following parts are now available:—

- Vol. I, Part 2. Thysanura and Diplura. By M. J. Delany. Price 2s. 6d. plus postage.
- Vol. I, Part 5. Dermaptera and Orthoptera. By W. D. Hincks. Second edn. Price 6s. 0d. plus postage.
- Vol. I, Part 6. Plecoptera. By D. E. Kimmins. Price 3s. 6d. plus postage.
- Vol. I, Part 9. Ephemeroptera. By D. E. Kimmins. Price 3s. 6d. plus postage.
- Vol. I, Part 10. Odonata. By F. C. Fraser. Second edn. Price 10s. 0d. plus postage.
- Vol. IV, Part 3. Coleoptera, Hydradephaga. By F. Balfour-Browne. Price 6s. plus postage.
- Vol. IV, Part 8a. Coleoptera: Staphylinidae (part). By C. E. Tottenham. Price 15s. 0d. plus postage.
- Vol. V, Part 7. Coleoptera: Coccinellidae and Sphindidae. By R. D. Pope. Price 2s. 6d. plus postage.
- Vol. V, Part 9. Coleoptera. By F. D. Buck. Price 6s. plus postage.
- Vol. V, Part 12. Coleoptera: Cerambycidae. By E. A. J. Duffy. Price 3s. 6d. plus postage.
- Vol. V, Part 15. Coleoptera, Scolytidae and Platypodidae. By E. A. J. Duffy. Price 3s. 6d. plus postage.
- Vol. VI, Part 2a. Hymenoptera: Symphyta (part). By R. B. Benson. Price 10s. 0d. plus postage.
- Vol. VI, Part 2b. Hymenoptera: Symphyta (contd.). By R. B. Benson. Price 15s. 0d. plus postage.
- Vol. IX, Part 1. Diptera: Introduction and Key to Families. By H. Oldroyd. Second edn. Price 7s. 6d. plus postage.
- Vol. IX, Part 2. Diptera, Nematocera: Families TIPULIDAE to CHIRONOMIDAE. By R. L. Coe, Paul Freeman and P. F. Mattingly. Price 20s. 0d. plus postage.
- Vol. X, Part 1. Diptera: Syrphidae. By R. L. Coe. Price 17s. 6d. plus postage.
- Vol. X, Part 4a. Diptera, Cyclorrhapha (part). By F. I. van Emden. Price 20s. 0d. plus postage.

Orders for the complete series or for separate parts can be placed with the Registrar at the Society's rooms now, but prices can only be quoted for those parts already issued.

Fellows of the Society may purchase one copy at a discount of 25 per cent.; additional copies at the full published price.

STYLOPS, a Journal of Taxonomic Entomology.

1932-1935. Vols. 1-4 (all issued). Price £2 3s. 0d. each; to Fellows £1 12s. 9d.

HÜBNER: A BIBLIOGRAPHICAL AND SYSTEMATIC ACCOUNT OF THE ENTOMOLOGICAL WORKS OF JACOB HÜBNER AND THE SUPPLEMENTS THERETO. In 2 vols. By Francis Hemming. Price: Vol. 1. 605 pp. £1 15s. 0d.; Vol. 2. 275 pp. 15s. 0d.

THE HISTORY OF THE ENTOMOLOGICAL SOCIETY OF LONDON, 1833-1933. By S. A. Neave, assisted by F. J. Griffin. Price 10s. 6d.

SERIAL PUBLICATIONS IN THE LIBRARY OF THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON. 1951. Price 5s. 0d.

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